

Application No. 09/838,745
Amendment "A" dated February 22, 2005
Reply to Office Action mailed November 19, 2004

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In computer network interconnecting a client system, a proxy system, and a server system, wherein data exchanged over the computer network is subject to being compromised, a method of negotiating, through the proxy system, a secure end-to-end connection between the client system and the server system, wherein the client system securely authenticates to the proxy system, the method comprising the acts of:

receiving a request from the client system for a secure connection between the client system and the proxy system;

establishing a secure connection between the client and proxy systems, in which at least the client is authenticated to the proxy system;

receiving a request from the client system for a secure end-to-end connection with the server system;

only after authenticating the client, forwarding the client system request for a secure end-to-end connection to the server system; and

downgrading the secure connection between the client system and the proxy system to be insecure after the secure end-to-end connection is established, whereby the secure end-to-end connection is encapsulated within the insecure client-proxy connection, and such that the proxy server does not encrypt or decrypt any data sent between the client and the server.

2. (Original) A method as recited in claim 1 further comprising the acts of:

issuing an authenticate challenge to the client system; and

receiving, over the secure client-proxy connection, proper authentication credentials from the client system.

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3. (Original) A method as recited in claim 2 wherein the authenticate challenge issued to the client system is one of a basic and a digest authenticate challenge.

4. (Original) A method as recited in claim 1 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is certificate based.

5. (Original) A method as recited in claim 4 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is one of a secure sockets layer and a transport layer security connection.

6. (Original) A method as recited in claim 1 further comprising the act of sending a certificate to the client system, wherein the certificate may be used to verify the identity of the proxy system.

7. (Original) A method as recited in claim 1 further comprising the act of receiving proper authentication credentials from the client system, wherein the proper authentication credentials received from the client system are certificate based.

8. (Original) A method as recited in claim 1 further comprising the act of transferring data between the client system and the server system through the secure end-to-end connection.

9. (Original) A method as recited in claim 1 wherein downgrading the secure connection between the client system and the proxy system to be insecure comprises the act of setting the cipher set for the connection to be a null cipher.

10. (Original) A method as recited in claim 1 wherein the request for a secure end-to-end connection comprises a hypertext transfer protocol connect request.

11. (Original) A method as recited in claim 1 wherein the server system comprises one of a reverse proxy server system and a forward proxy system.

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12. (Original) A method as recited in claim 1 wherein at least one connection is over the Internet.

13. (Original) A method as recited in claim 1 wherein the server system comprises a cascaded proxy system, the server system allowing secure connections, insecure connections, or both secure and insecure connections, with one or more other server systems.

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14. (Currently Amended) In computer network interconnecting a client system, a proxy system, and a server system, wherein data exchanged over the computer network is subject to being compromised, a method of negotiating, through the proxy system, a secure end-to-end connection between the client system and the server system, wherein the client system securely authenticates to the proxy system, the method comprising the acts of:

sending a request to the proxy system for a secure connection between the client system and the proxy system;

establishing a secure connection between the client and proxy systems, in which at least the client is authenticated to the proxy system;

sending a request to the proxy system for a secure end-to-end connection with the server system, wherein the proxy system forwards the request to the server system only after first authenticating the client; and

downgrading the secure connection between the client system and the proxy system to be insecure after the secure end-to-end connection is established, whereby the secure end-to-end connection is encapsulated within the insecure client-proxy connection, and such that the proxy server does not encrypt or decrypt any data sent between the client and the server.

15. (Original) A method as recited in claim 14 further comprising the acts of:

receiving an authenticate challenge from the proxy system; and

sending, over the secure client-proxy connection, proper authentication credentials to the proxy system.

16. (Original) A method as recited in claim 15 wherein the authenticate challenge received by the client system is one of a basic and a digest authenticate challenge.

17. (Original) A method as recited in claim 14 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is certificate based.

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18. (Original) A method as recited in claim 17 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is one of a secure sockets layer and a transport layer security connection.

19. (Original) A method as recited in claim 14 further comprising the act of receiving a certificate from the proxy system, wherein the certificate may be used to verify the identity of the proxy system.

20. (Original) A method as recited in claim 14 further comprising the act of sending proper authentication credentials to the proxy system, wherein the proper authentication credentials sent to the proxy system are certificate based.

21. (Original) A method as recited in claim 14 further comprising the act of transferring data to the server system through the secure end-to-end connection.

22. (Original) A method as recited in claim 14 wherein downgrading the secure connection between the client system and the proxy system to be insecure comprises the act of setting the cipher set for the connection to be a null cipher.

23. (Original) A method as recited in claim 14 wherein the request for a secure end-to-end connection comprises a hypertext transfer protocol connect request.

24. (Original) A method as recited in claim 14 wherein the server system comprises one of a reverse proxy server system and a forward proxy server system.

25. (Original) A method as recited in claim 14 wherein at least one connection is over the Internet.

26. (Original) A method as recited in claim 14 wherein the server system comprises a cascaded proxy system, the server system allowing secure connections, insecure connections, or both secure and insecure connections, with one or more other server systems.

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27. (Currently Amended) In computer network interconnecting a client system, a proxy system, and a server system, wherein data exchanged over the computer network is subject to being compromised, a method of negotiating, through the proxy system, a secure end-to-end connection between the client system and the server system, wherein the client system securely authenticates to the proxy system, the method comprising steps for:

negotiating a secure connection between the client and proxy systems, in which at least the client is authenticated to the proxy system;
only after authenticating the client, negotiating a secure end-to-end connection between the client and the server system using the secure client-proxy connection;
altering the secure client-proxy connection so that it is no longer secure; and
encapsulating the secure end-to-end connection within the insecure client-proxy connection, and such that the proxy server does not encrypt or decrypt any data sent between the client and the server.

28. (Original) A method as recited in claim 27 further comprising a step for authenticating the client system to the proxy system, wherein the step for authenticating comprises an act of either the client system sending or the proxy system receiving, proper authentication credentials including at least one of a basic authenticate challenge response, a digest authenticate challenge response, and a certificate.

29. (Original) A method as recited in claim 27 wherein the step for negotiating a secure connection between the client and proxy systems comprises the act of the client system receiving or the proxy system sending a certificate, wherein the certificate may be used to verify the identity of the proxy system.

30. (Original) A method as recited in claim 27 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is certificate based.

31. (Original) A method as recited in claim 30 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is one of a secure sockets layer and a transport layer security connection.

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32. (Original) A method as recited in claim 27 wherein the step for altering the secure client-proxy connection comprises the act of setting the cipher set for the connection to be a null cipher, thereby downgrading the client-proxy connection to be insecure.

33. (Original) A method as recited in claim 27 where the step for negotiating a secure end-to-end connection comprises the act of either the client system sending or the proxy system receiving a hypertext transfer protocol connect request.

34. (Original) A method as recited in claim 27 wherein the server system comprises a cascaded proxy system, the server system allowing secure connections, insecure connections, or both secure and insecure connections, with one or more other server systems.

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35. (Currently Amended) In computer network interconnecting a client system, a proxy system, and a server system, wherein data exchanged over the computer network is subject to being compromised, a computer program product for implementing a method of negotiating, through the proxy system, a secure end-to-end connection between the client system and the server system, wherein the client system securely authenticates to the proxy system, comprising:

a computer readable medium for carrying machine-executable instructions for implementing the method; and

wherein said method is comprised of machine-executable instructions for a proxy system performing the acts of:

receiving a request from the client system for a secure connection between the client system and the proxy system;

establishing a secure connection between the client and proxy systems, in which at least the client is authenticated to the proxy system;

receiving a request from the client system for a secure end-to-end connection with the server system;

only after authenticating the client, forwarding the client system request for a secure end-to-end connection to the server system; and

downgrading the secure connection between the client system and the proxy system to be insecure after the secure end-to-end connection is established, whereby the secure end-to-end connection is encapsulated within the insecure client-proxy connection, and such that the proxy server does not encrypt or decrypt any data sent between the client and the server.

36. (Original) A computer program product as recited in claim 35, the method comprised further of machine-executable instructions for performing the acts of:

issuing an authenticate challenge to the client system; and

receiving proper authentication credentials from the client system.

37. (Original) A computer program product as recited in claim 36 wherein the authenticate challenge issued to the client system is one of a basic and a digest authenticate challenge.

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38. (Original) A computer program product as recited in claim 36, the method comprised further of machine executable instructions for performing the act of sending a certificate to the client system, wherein the certificate may be used to verify the identity of the proxy system.

39. (Original) A computer program product as recited in claim 36 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is certificate based.

40. (Original) A computer program product as recited in claim 39 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is one of a secure sockets layer and a transport layer security connection.

41. (Original) A computer program product as recited in claim 35, the method further comprised of machine-executable instructions for performing the act of receiving proper authentication credentials from the client system, wherein proper authentication credentials received from the client system are certificate based.

42. (Original) A computer program product as recited in claim 35, the method further comprised of machine-executable instructions for performing the act of transferring data between the client system and the server system through the secure end-to-end connection.

43. (Original) A computer program product as recited in claim 35, the method comprised further of machine-executable instructions for performing the act of setting the cipher set for the secure client-proxy connection to be a null cipher, thereby downgrading the client-proxy connection to be insecure.

44. (Original) A computer program product as recited in claim 35 wherein the request for a secure end-to-end connection comprises a hypertext transfer protocol connect request.

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45. (Original) A computer program product as recited in claim 35 wherein the server system comprises one of a reverse proxy server system and a forward proxy server system.

46. (Original) A computer program product as recited in claim 35 wherein at least one connection is over the Internet.

47. (Original) A computer program product as recited in claim 35 wherein the server system comprises a cascaded proxy system, the server system allowing secure connections, insecure connections, or both secure and insecure connections, with one or more other server systems.

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48. (Currently Amended) In computer network interconnecting a client system, a proxy system, and a server system, wherein data exchanged over the computer network is subject to being compromised, a computer program product for implementing a method of negotiating, through the proxy system, a secure end-to-end connection between the client system and the server system, wherein the client system securely authenticates to the proxy system, comprising:

a computer readable medium for carrying machine-executable instructions for implementing the method; and

wherein said method is comprised of machine-executable instructions for a client system performing the acts of:

sending a request to the proxy system for a secure connection between the client system and the proxy system;

establishing a secure connection between the client and proxy systems, in which at least the client is authenticated to the proxy system;

sending a request to the proxy system for a secure end-to-end connection with the server system, wherein the proxy system forwards the request to the server system only after first authenticating the client; and

downgrading the secure connection between the client system and the proxy system to be insecure after the secure end-to-end connection is established, whereby the secure end-to-end connection is encapsulated within the insecure client-proxy connection, and such that the proxy server does not encrypt or decrypt any data sent between the client and the server.

49. (Original) A computer program product as recited in claim 48, the method comprised further of machine-executable instructions for performing the acts of:

receiving an authenticate challenge from the proxy system; and

sending proper authentication credentials to the proxy system.

50. (Original) A computer program product as recited in claim 49 wherein the authenticate challenge received by the client system is one of a basic and a digest authenticate challenge.

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51. (Original) A computer program product as recited in claim 48, the method comprised further of machine-executable instructions for performing the act of receiving a certificate from the proxy system, wherein the certificate may be used to verify the identity of the proxy system.

52. (Original) A computer program product as recited in claim 48 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is certificate based.

53. (Original) A computer program product as recited in claim 52 wherein at least one of the secure client-proxy connection and the secure end-to-end connection is one of a secure sockets layer and a transport layer security connection.

54. (Original) A computer program product as recited in claim 48, the method comprised further of machine-executable instructions for performing the act of sending proper authentication credentials to the proxy system, wherein the proper authentication credentials sent to the proxy system are certificate based.

55. (Original) A computer program product as recited in claim 48, the method comprised further of machine-executable instructions for performing the act of transferring data between the client system and the server system through the secure end-to-end connection.

56. (Original) A computer program product as recited in claim 48, the method comprised further of machine-executable instructions for performing the act of setting the cipher set for the secure client-proxy connection to be a null cipher, thereby downgrading the client-proxy connection to be insecure.

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57. (Original) A computer program product as recited in claim 48 wherein the request for a secure end-to-end connection comprises a hypertext transfer protocol connect request.

58. (Original) A computer program product as recited in claim 48 wherein the server system comprises one of a reverse proxy server system and a forward proxy server system.

59. (Original) A computer program product as recited in claim 48 wherein at least one connection is over the Internet.

60. (Original) A computer program product as recited in claim 48 wherein the server system comprises a cascaded proxy system, the server system allowing secure connections, insecure connections, or both secure and insecure connections, with one or more other server systems.

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